

CLAIMS

What is claimed is:

1. An integrated circuit (IC) package comprising:
a mold compound, the mold compound having a frame embedded therein, said embedded frame having a top surface, a bottom surface, and a top-to-bottom opening therein;
a die attached to the mold compound wherein the embedded frame lies below a periphery of the die; and
a window attached to the mold compound and located above the die to allow light to reach the die.
2. The IC package of claim 1, wherein the embedded frame substantially comprises ceramic.
3. The IC package of claim 1, wherein the embedded frame substantially comprises an alloy.
4. The IC package of claim 3, wherein the embedded frame substantially comprises alloy-42.
5. The IC package of claim 1 further comprising:
a window frame bordering the window, the window frame having a CTE smaller than that of the mold compound.
6. The IC package of claim 5, wherein the window frame is made of the same material as that of the embedded frame.
7. The IC package of claim 1, wherein the frame lies below a periphery of the die.
8. An integrated circuit (IC) package comprising:
a mold compound having a ceramic frame embedded therein;
a die having a periphery, wherein the frame lies below the periphery of the die; and

a window having a ceramic frame that is attached to the mold compound and is located above the periphery of the die.

9. A method of making an IC package, the method comprising:
placing a frame in a mold wherein the frame has a top surface, a bottom surface, and a top-to-bottom opening therein;
substantially surrounding the frame with a mold compound;
attaching a die to the mold compound including positioning the die so that its periphery lies over the frame;
attaching the die to a lead frame of the IC package; and
enclosing the die by attaching a window to the mold compound above the die.

10. The method of claim 9, wherein substantially surrounding the frame with a mold compound is performed by substantially surrounding a ceramic frame with a mold compound.

11. The method of claim 9, wherein substantially surrounding the frame with a mold compound is performed by substantially surrounding an alloy frame with a mold compound.

12. The method of claim 10, wherein substantially surrounding the frame with a mold compound is performed by substantially surrounding an alloy-42 frame with a plastic mold compound.

13. A method of making an IC package, the method comprising:
attaching a die to a mold compound having a frame embedded within it including positioning the die so that its periphery lies over the frame wherein the frame has a top surface, a bottom surface, and a top-to-bottom opening therein;
attaching the die to a lead frame of the IC package; and
attaching a window to the mold compound above the die, to enclose the die.

14. The method of claim 13, wherein attaching the window to the mold compound further comprises:

attaching the window to an alloy window frame; and

attaching the alloy window frame to the mold compound.

15. The method of claim 13, wherein attaching the window to the mold compound further comprises:

attaching the window to a ceramic window frame; and
attaching the ceramic window frame to the mold compound.

16. A method of attaching an IC package to a circuit board, the IC package comprising a mold compound having an embedded frame wherein the frame has a top surface, a bottom surface, and a top-to-bottom opening therein, a lead frame, a die attached to the lead frame, a periphery of the die being located above the embedded frame, and a window located above the die to allow light to reach the die, the method comprising:

placing the IC package in proximity to the circuit board; and
attaching the IC package to the circuit board via a mass reflow process.

17. The method of claim 16, wherein attaching the IC package to the circuit board comprises heating the IC package to above 215°C.

18. An IC package substantially as herein described with reference to and as shown in Figures 5-9B of the accompanying drawings.

19. A method as claimed in claims 9, 13, or 16 substantially as herein described with reference to and as shown in Figures 5-9B of the accompanying drawings.